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Job Number: 1001142131
Project Number: 09CA37347
File Number: MC15896
Date: September 22, 2009
Model: LRF2-OCRB-P-xx
FCC ID: JPZ0061
IC Number: 2851A-JPZ0061

Electromagnetic Compatibility Test Report

For

LUTRON ELECTRONICS INC

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Underwriters Laboratories Inc.
1285 Walt Whitman Rd.
Melville, NY 11747

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Tel: (631) 271-6200 Fax: (631) 439-6095

Job Number: 1001142131 File Number: MC15896 Page 2 of 54
Model Number: LRF2-OCRB-P-xx
Client Name: LUTRON ELECTRONICS INC
FCC ID: JPZ0061 IC Number 2851A-PZ0061

Test Report Details

Tests Performed By: **Underwriters Laboratories Inc.
1285 Walt Whitman Rd.
Melville, NY 11747**

Tests Performed For: **LUTRON ELECTRONICS INC
7200 SUTTER ROAD
COOPERBURG, PA 18036**

Applicant Contact: **BOB SPEHALSKI
Title: Engineering Manager
Phone: (610) 282-7424
E-mail: RSPEHALSKI@LUTRON.COM**

Test Report Date: **September 22, 2009**

Product Type: **Occupancy Sensor (transmit only)**

Product standards: **FCC Part 15, Subpart C, 15.231**

Model Number: **LRF2-OCRB-P-xx**

Sample Serial Number: **Non-serialized production unit**

EUT Category: **Periodic Low Power Transmitter**

Testing Start Date: **September 14, 2009**

Date Testing Complete: **September 21, 2009**

Overall Results: Compliant

Underwriters Laboratories Inc. reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. Underwriters Laboratories Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from Underwriters Laboratories Inc. issued reports. This report shall not be used to claim, constitute or imply product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the US government.

This report may contain test results that are not covered by the NVLAP or A2LA accreditation. The scope of accreditation is limited to the specific tests that are listed on the NVLAP and/or A2LA websites referenced at the end of this report.

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Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None	Original	-	-

1.0 GENERAL - Product Description

1.1 Equipment Description

Lutron's Occupancy Sensors are wireless, transmit only, ceiling-mounted, battery-powered, passive infrared (PIR) devices that automatically control lights via RF communication with a dimming or switching device. These Sensors detect the heat from people moving within an area to determine when the space is occupied. The Sensors then transmit the appropriate commands to the associated dimming or switching device to turn the lights on or off automatically.

Testing of the LRF2-OCRB-P-xx represents the LRF2-VCRB-P. The difference between this model and the model tested is a LED and a tack switch are not populated. However all RF circuits are the same.

Per FCC Part 2.1093 (C) this device is not required to undergo testing for radio-frequency radiation exposure.

Antenna description: Permanently attached to the RF circuit board and the transmit antenna type is a PCB trace antenna.

1.2 Equipment Marking Plate

Not Available

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 FCC ID: JPZ0061 IC Number 2851A-PZ0061

1.3 Device Configuration During Test

1.3.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Occupancy Sensor	LUTRON ELECTRONICS INC	LRF2-OCRB-P- xx	None
Note: EUT - Equipment Under Test, AE - Auxiliary/Associated Equipment, or SIM - Simulator (Not Subjected to Test)				

1.3.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	Mains	Batt	N	N	None
Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical I/O = Signal Input or Output Port (Not Involved in Process Control) TP = Telecommunication Ports Batt = Battery					

1.3.3 EUT Internal Operating Frequencies:

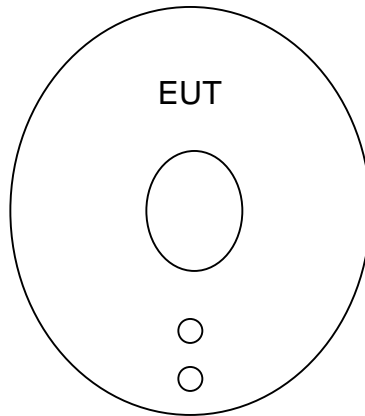
Frequency (MHz)	Description
0.5417	Internal clock/oscillator
1	Internal clock/oscillator
4	Internal clock/oscillator
8	Internal clock/oscillator
26	Internal clock/oscillator
431 - 437	Fundamental Transmit frequency range (6 channels 350kHz apart). User selected single channel device.

1.3.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
Rated	3	-	-	DC	-	3V Li-ion battery
1	3	-	-	DC	-	3V Li-ion battery

1.4 Block Diagram:

The diagram below illustrates the configuration of the equipment above.



1.5 EUT Configurations

Mode #	Description
1	Stand Alone

1.6 EUT Operation Modes

Mode #	Description
1	Continuously transmitting with modulation at 431MHz
2	Continuously transmitting with modulation at 437MHz
3	Normal transmissions at 431MHz
4	Normal transmissions at 437MHz
5	Sleep Mode

2.0 Summary

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by Underwriters Laboratories Inc. in accordance with the procedures stated in each test requirement and specification. The applicant determined the list of tests performed were applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

2.1 Deviations from standard test methods

None

2.2 Device Modifications Necessary for Compliance

None

2.3 Reference Standards

Standard Number	Standard Name	Standard Date
FCC Part 15, Subpart C, 15.231	Code of Federal Regulations, Part 15, Radio Frequency Devices	2009
FCC Part 15, Subpart B	Code of Federal Regulations, Part 15, Radio Frequency Devices	2009
RSS-GEN, Issue 2	General Requirements and Information for the Certification of Radiocommunication Equipment	2007
RSS-210, Issue 7	Low-power License-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment	2007
ICES-003, Issue 4	Digital Apparatus	2004

2.4 Results Summary

This product is considered a periodic low power transmitter.

Requirement – Test	Result (Compliant / Non-Compliant)*
Fundamental Radiated Emissions	Compliant
Spurious Radiated Emissions	Compliant
Occupied Bandwidth	Compliant
Pulse Train - Averaging Factor	Compliant
Cease Operation	Compliant
Radiated Emissions - Unintentional	Compliant

Test Engineer:



Bob DeLisi (Ext.22452)
 Senior Staff Engineer
 International EMC Services
 Conformity Assessment Services-

Reviewer:



Joe Danisi(Ext.23055)
 Lead Engineering Associate
 International EMC Services
 Conformity Assessment Services

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

3.0 Calibration of Equipment Used for Measurement

All test equipment and test accessories are calibrated on a regular basis. The maximum time between calibrations is one year or the manufacturers' recommendation, whichever is less.

All test equipment calibrations are traceable to the National Institute of Standards and Technology (NIST); therefore, all test data recorded in this report is traceable to NIST.

4.0 EMISSIONS TEST RESULTS

The emissions tests were performed according to following regulations:

----- North America -----

Code of Federal Regulations Title 47	Part 15, Subpart B and C, Radio Frequency Devices
Industry Canada	RSS-GEN, RSS-210 and ICES-003

Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be verified at the time the test is conducted.

Ambient Temperature, °C	22.5 ± 2.5	Relative Humidity, %	45 ± 15	Barometric Pressure, mBar	950 ± 150
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4.1 Test Conditions and Results – OCCUPIED BANDWIDTH

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the spectrum analyzer resolution bandwidth set per the appropriate standard.
Basic Standard	FCC Part 15 Subpart C,15.231
Occupied Bandwidth Limits	
0.25% of Fo	

Table 1 Occupied Bandwidth Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	3
1	1	4
Supplementary information: None		

Table 2 Occupied Bandwidth Spectrum Analyzer Settings

Resolution Bandwidth	Occupied Bandwidth Requirements	
	dBc	%
10kHz	-20	99
Supplementary information: None		

Table 3 Occupied Bandwidth Test Equipment

Test Equipment Used			
Description	Manufacturer	Model	Identifier
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081
Dipole Antenna	EMCO	3121C	3359
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268
Measurement Software	UL	Version 9.3	44740

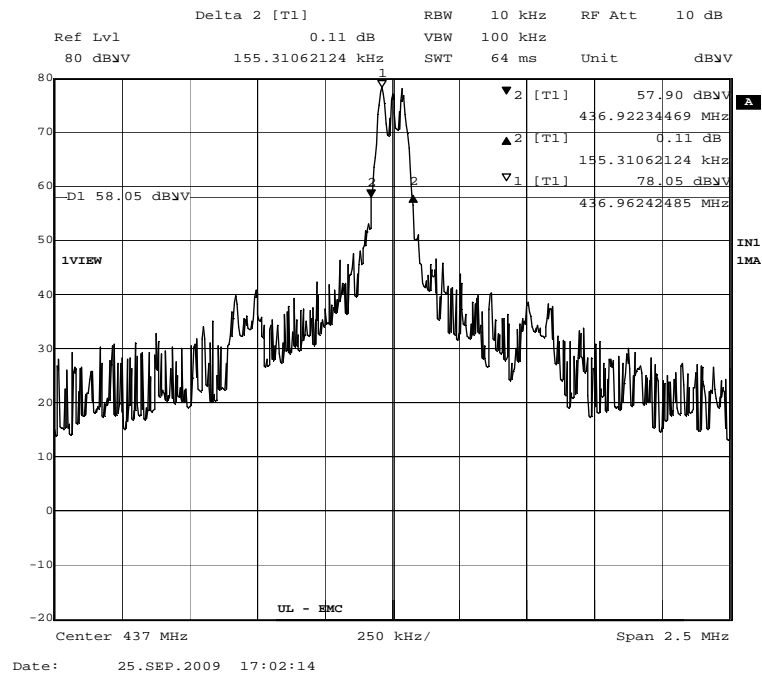
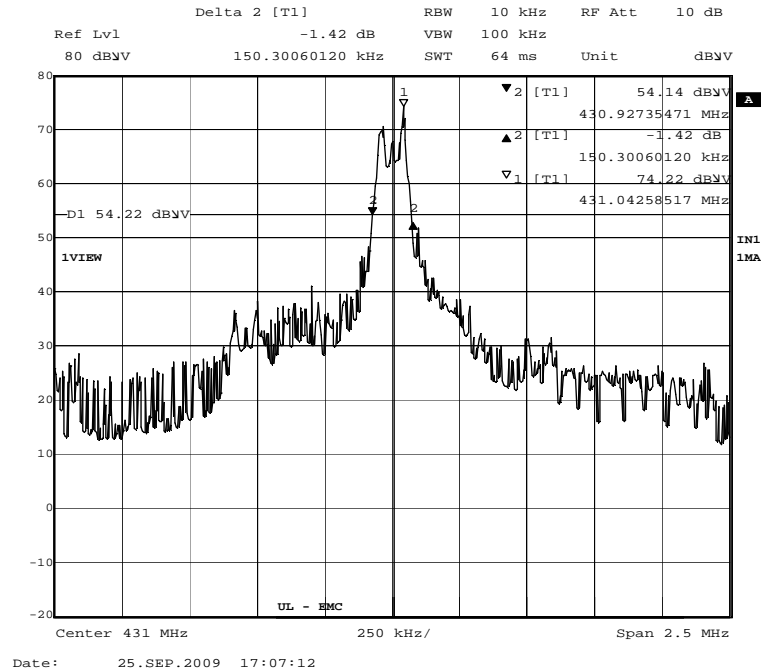
Figure 1 Test Setup for Occupied Bandwidth



Table 4 Occupied Bandwidth

Frequency (MHz)	20dB OBW	99% OBW	Limit (MHz)	Result
431	150.3	155.3	1.08	Pass
437	155.3	135.3	1.09	Pass

Figure 2 Occupied Bandwidth Graph



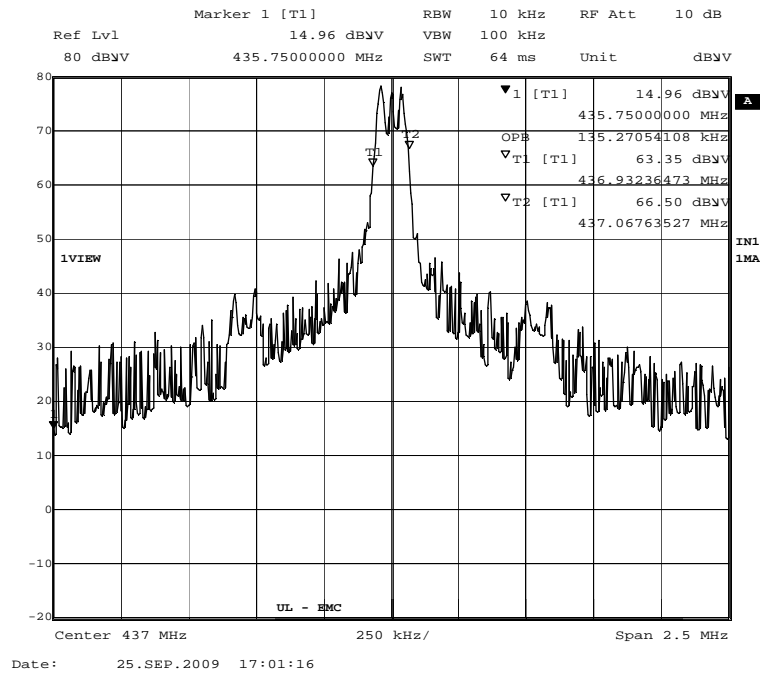
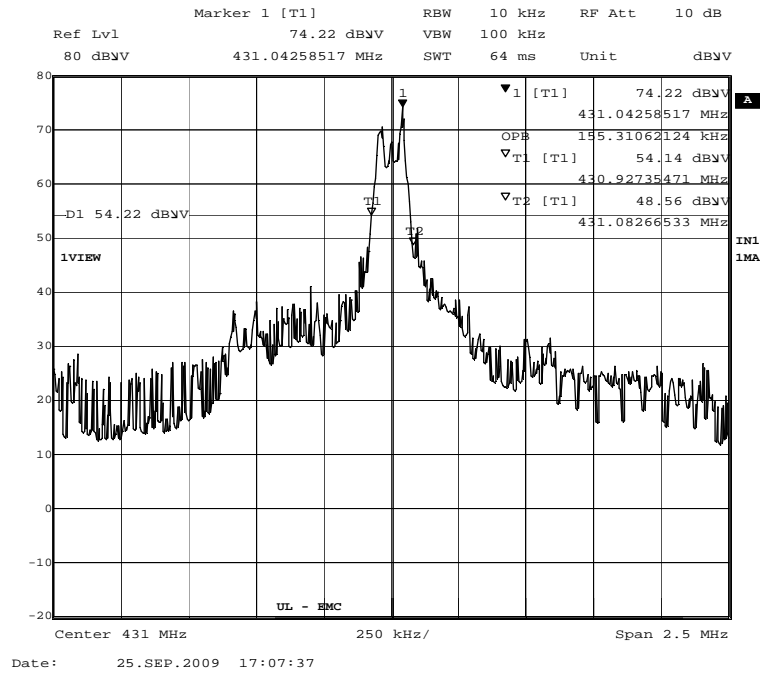
Job Number:
Model Number:
Client Name:
FCC ID:

1001142131 File Number: MC15896
LRF2-OCRB-P-xx
LUTRON ELECTRONICS INC
JPZ0061

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2851A-PZ0061



4.2 Test Conditions and Results – Cease Operation

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the transmission time measured with the spectrum analyzer set to zero span at the fundamental frequency.
Basic Standard	FCC Part 15 Subpart C, 15.231
Cease Operation Limits	
The transmissions shall stop within 5 seconds of either a button being released or if automatically controlled transmissions shall be stopped 5 seconds after transmissions begin.	

Table 5 Cease Operation Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	3
Supplementary information: None		

Table 6 Cease Operation Test Equipment

Test Equipment Used			
Description	Manufacturer	Model	Identifier
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081
Dipole Antenna	EMCO	3121C	3359
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268
Measurement Software	UL	Version 9.3	44740

Figure 4 Test Setup for Cease Operation

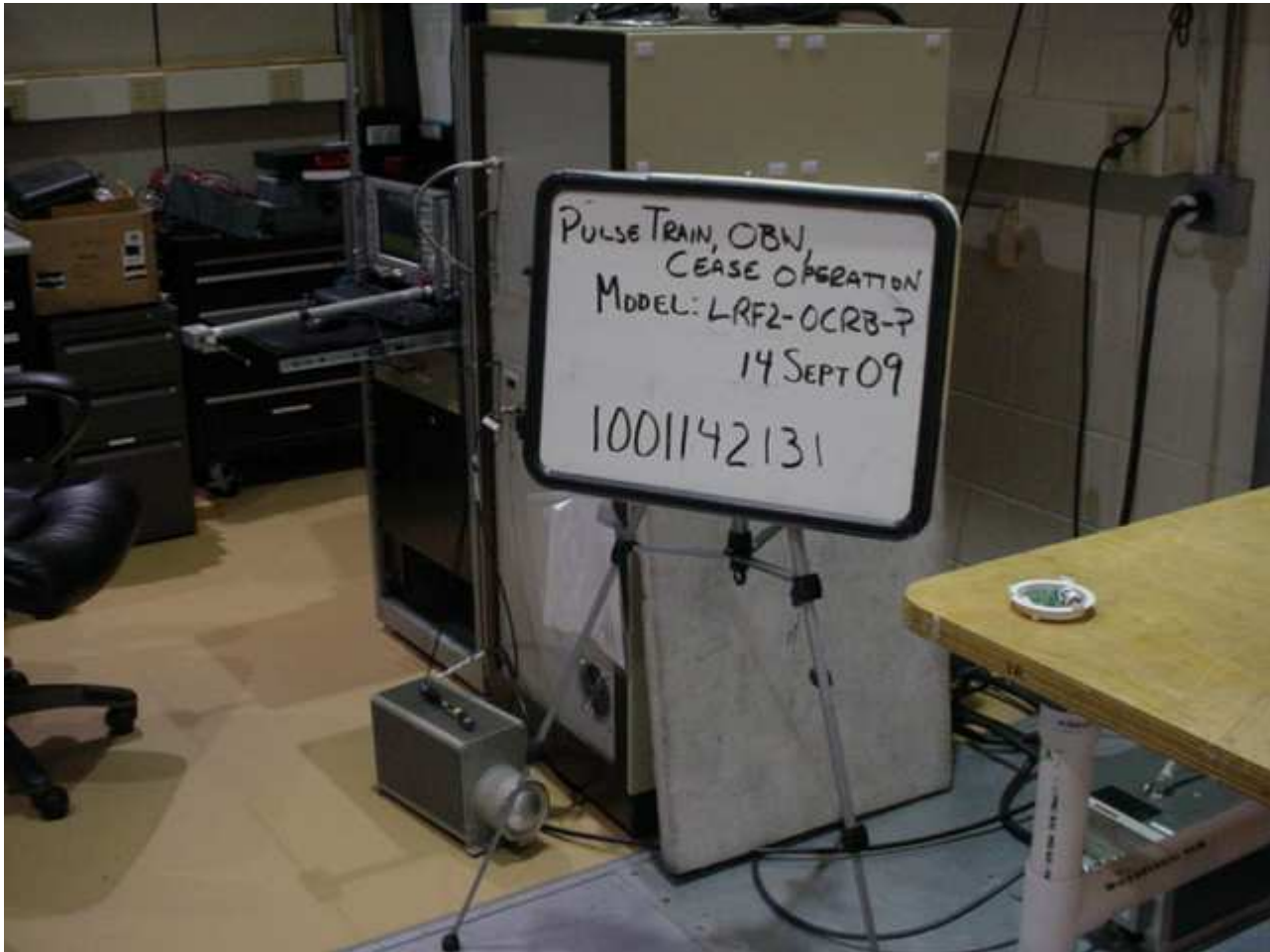
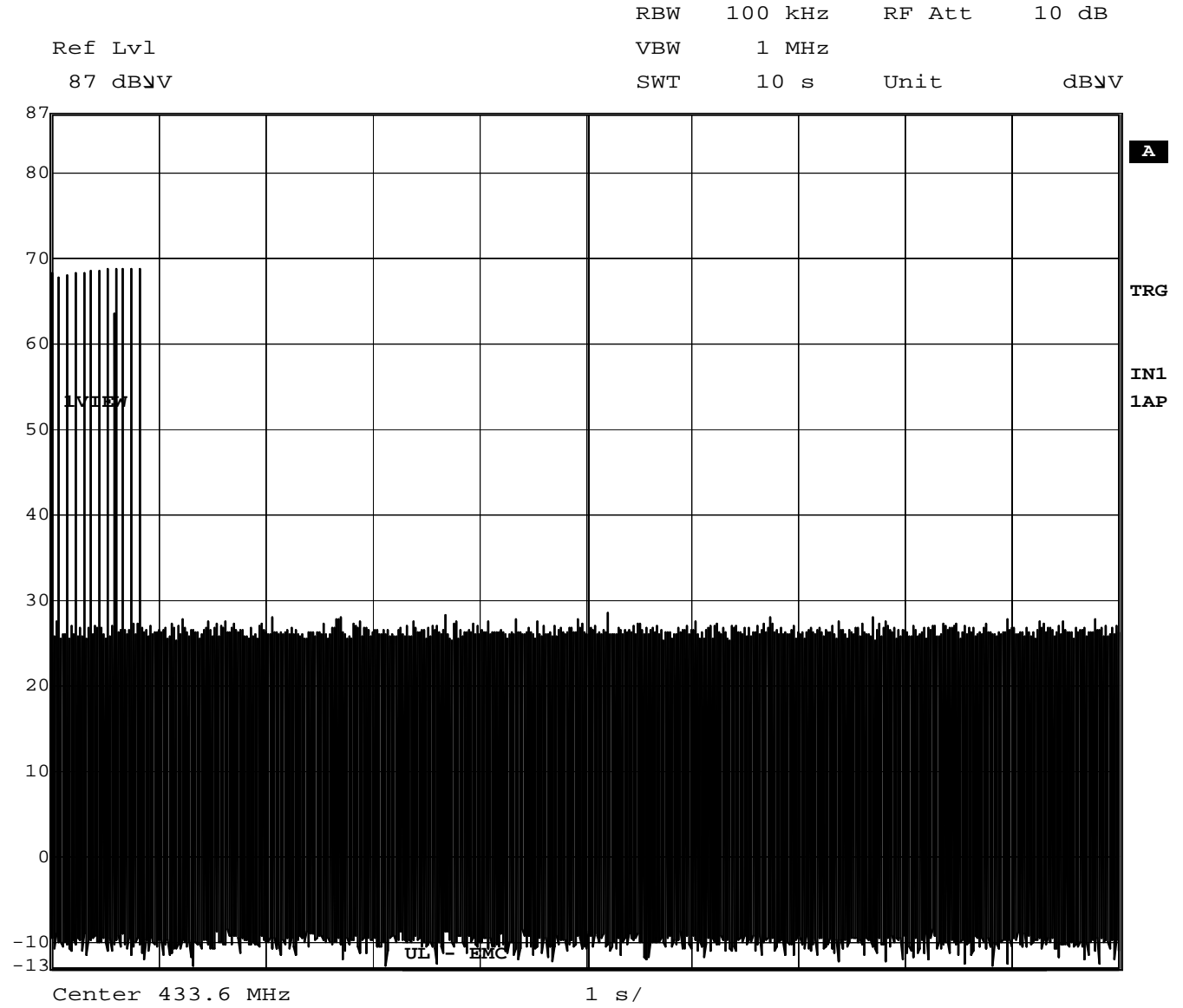


Figure 5 Cease Operation Graph



Date: 14.SEP.2009 08:42:26

4.3 Test Conditions and Results – Pulse Train

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The pulse train was measured with the spectrum analyzer set to zero span at the fundamental frequency.
Basic Standard	FCC Part 15 Subpart A, 15.35
Pulse Train Limits	
There are no limits for this test. This data is used to calculate the averaging correction factor that is applied to the measured peak radiated emissions results.	

Table 7 Pulse Train Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	3
Supplementary information: None		

Table 8 Pulse Train Calculation

Pulse Width (mS)	Total Transmission time or 100ms which ever is lesser	Average Correction Factor (dB) $20 \log \left(\frac{PulseWidth}{TotalTransmissionTime} \right)$
9.6	100	-20.4

Table 9 Pulse Train Test Equipment

Test Equipment Used			
Description	Manufacturer	Model	Identifier
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081
Dipole Antenna	EMCO	3121C	3359
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268
Measurement Software	UL	Version 9.3	44740

Figure 6 Test Setup for Pulse Train

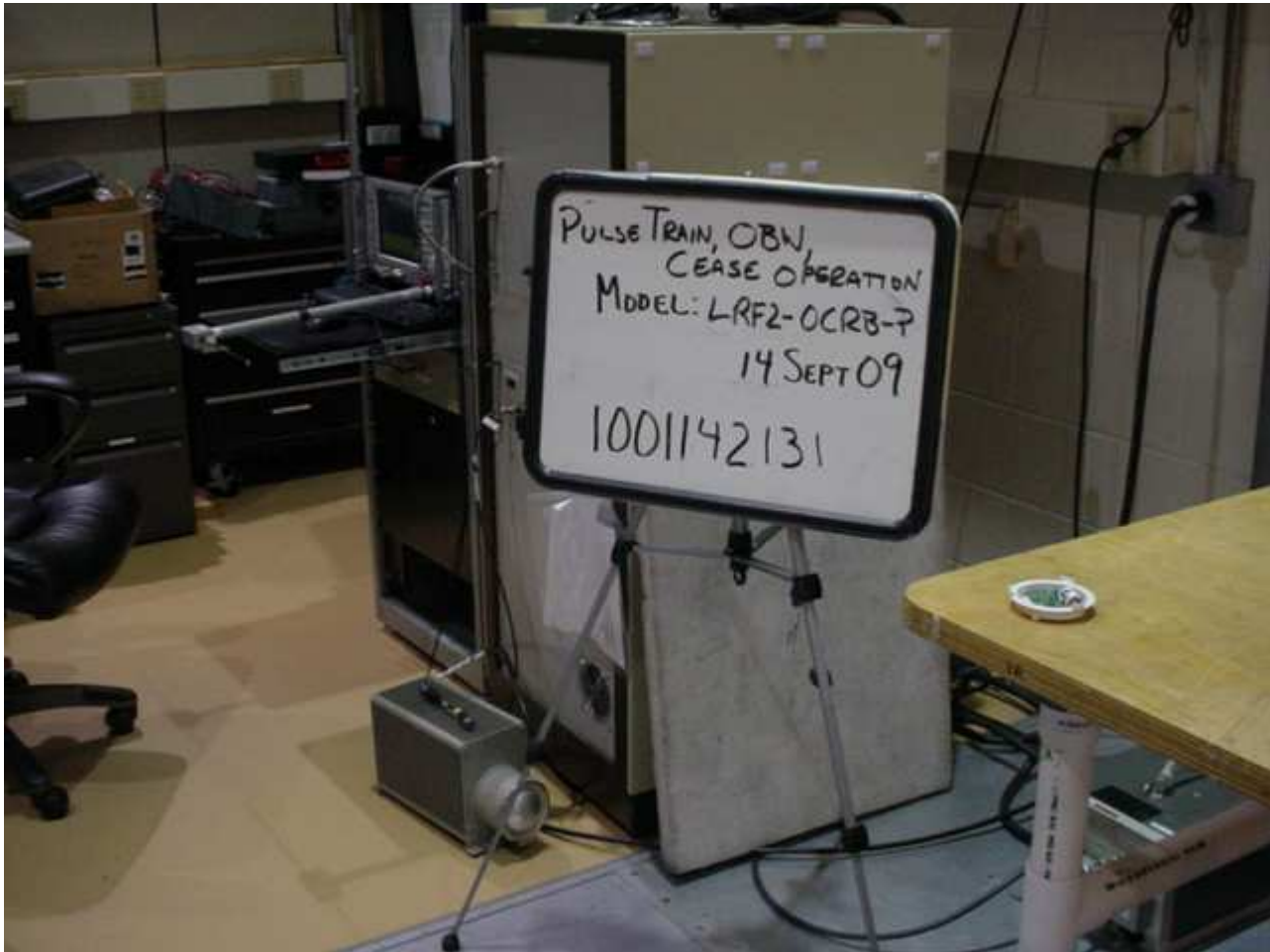
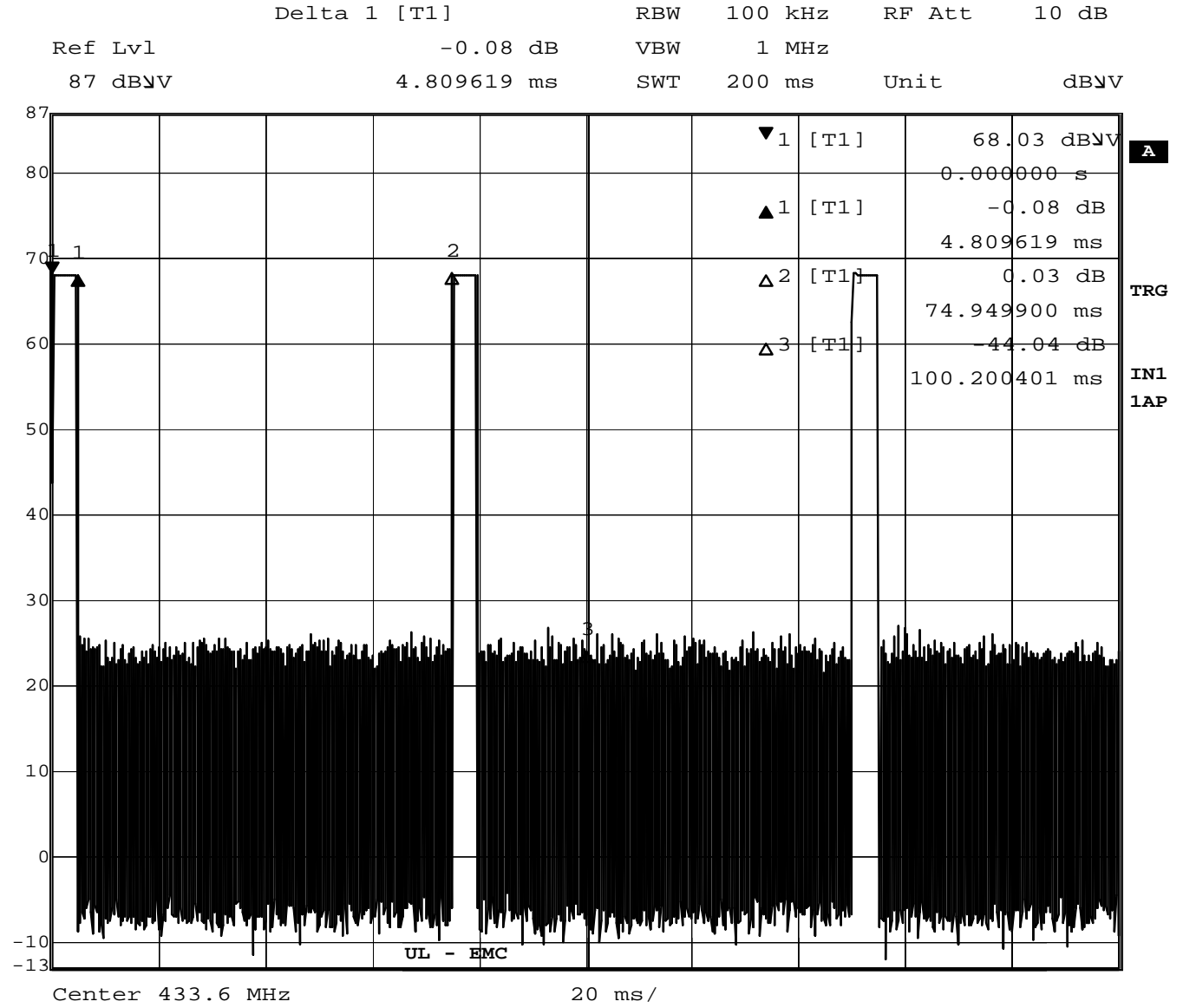


Figure 7 Pulse Train Graph



Date: 14.SEP.2009 08:45:24

4.4 Test Conditions and Results – INTENTIONAL RADIATED EMISSIONS

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4. From 9kHz to 5GHz preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.		
Basic Standard	FCC Part 15, Subpart C, 15.231		
UL LPG	80-EM-S0029		
	Frequency range	Measurement Point	
Fully configured sample scanned over the following frequency range	0.009 MHz – 5GHz	(3 meter measurement distance)	
Intentional Radiator Limits			
Frequency (MHz)	Limit (dBµV/m)		
	Quasi-Peak	Average	
	General Emissions	Fundamental	Spurious
0.009 – 0.490	128.5 – 93.8	-	-
0.490 – 1.705	73.8 – 63	-	-
1.705 – 30	69.5	-	-
30 – 88	40	-	-
88 – 216	43.5	-	-
216-960	46	-	-
1000-10000	54	-	-
Fundamental - 431		80.7	
Fundamental - 437		80.9	
Spurious of 431			60.7
Spurious of 437			60.9
Supplementary information: Spurious limits are only applied against products of the transmitter. All other emissions must meet the general limits.			
For the range 9kHz to 30MHz, only one channel is tested since the transmitter does not operate in that range.			
A new battery was used prior to each test run in each frequency range.			

Table 10 Radiated Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1
1	1	2
Supplementary information: None		

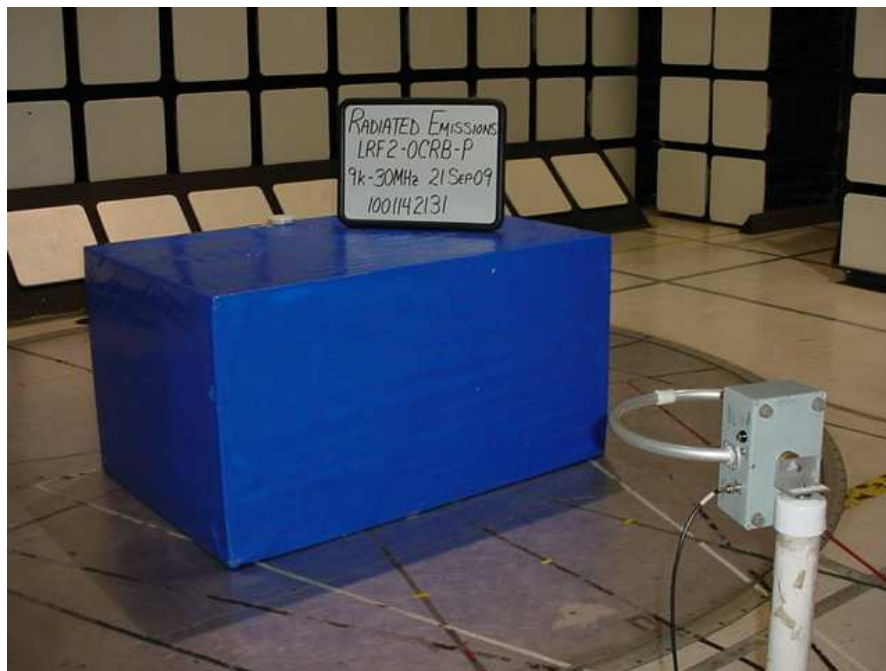
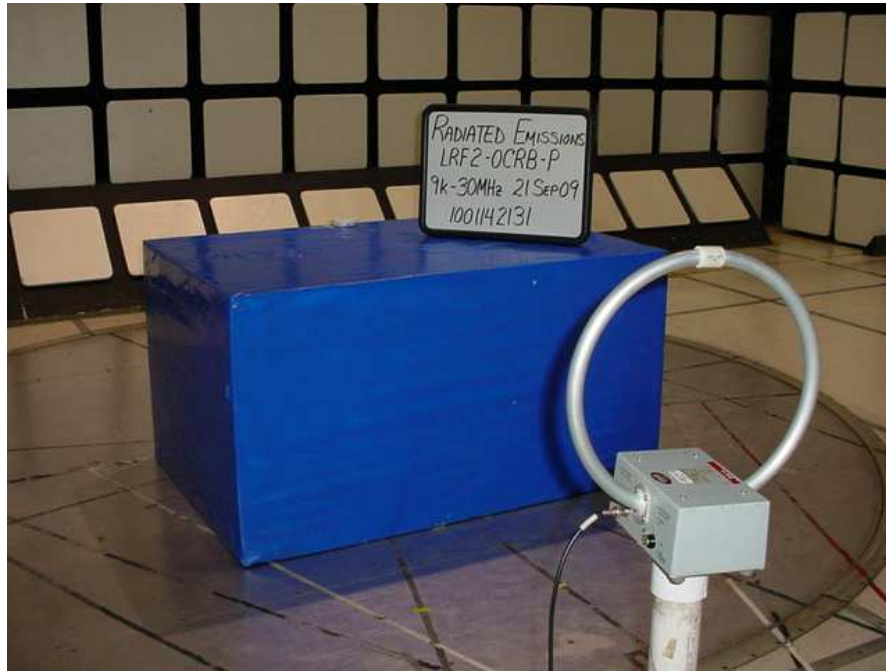
Table 11 Radiated Emissions Test Equipment

Test Equipment Used			
Description	Manufacturer	Model	Identifier
60Hz-30MHz			
EMI Receiver	Rohde & Schwarz	ESIB40	34968
Active Loop Antenna	EMCO	6507	ME5A-288
Switch Driver	HP	11713A	ME7A-627
System Controller	Sunol Sciences	SC99V	44396
Camera Controller	Panasonic	WV-CU254	44395
RF Switch Box	UL	1	44398
Measurement Software	UL	Version 9.3	44740
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268
30-1000MHz			
EMI Receiver	Rohde & Schwarz	ESIB40	34968
Bicon Antenna	Schaffner	VBA6106A	54
Log-P Antenna	Schaffner	UPA6109	44067
Switch Driver	HP	11713A	ME7A-627
System Controller	Sunol Sciences	SC99V	44396
Camera Controller	Panasonic	WV-CU254	44395
RF Switch Box	UL	1	44398
Measurement Software	UL	Version 9.3	44740
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268
Above 1GHz (Band Optimized System)			
Spectrum Analyzer	Agilent	E7405A	19695
Horn Antenna (1-2 GHz)	ETS	3161-01	51442
Horn Antenna (2-4 GHz)	ETS	3161-02	48107
Horn Antenna (4-8 GHz)	ETS	3161-03	48106
Signal Path Controller	HP	11713A	50250
Gain Controller	HP	11713A	50251
RF Switch / Preamp Fixture	UL	BOMS1	50249
System Controller	UL	BOMS2	50252

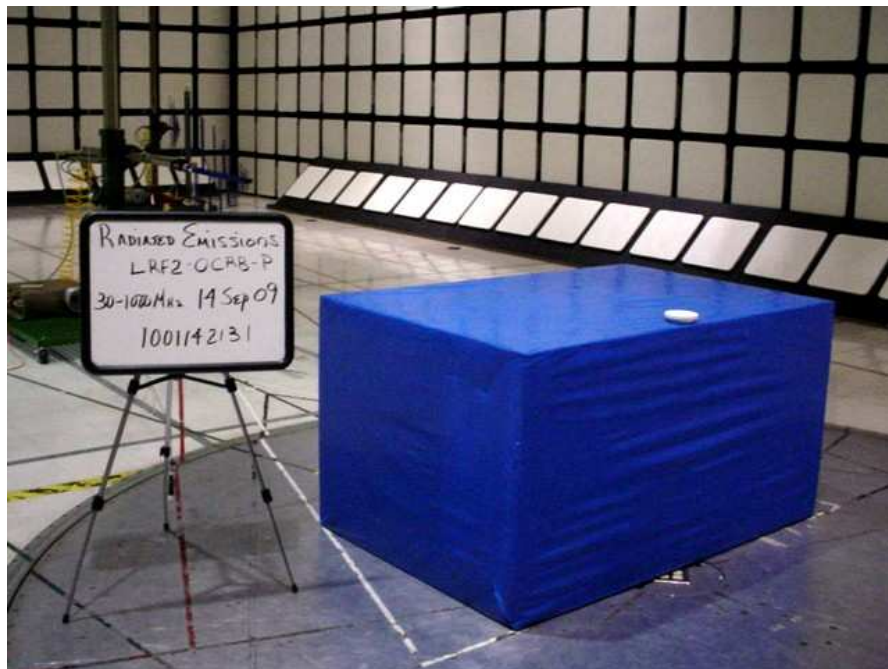
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Model Number: LRF2-OCRB-P-xx
Client Name: LUTRON ELECTRONICS INC
FCC ID: JPZ0061 IC Number 2851A-PZ0061

Test Equipment Used			
Description	Manufacturer	Model	Identifier
Measurement Software	UL	Version 9.3	44740
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268

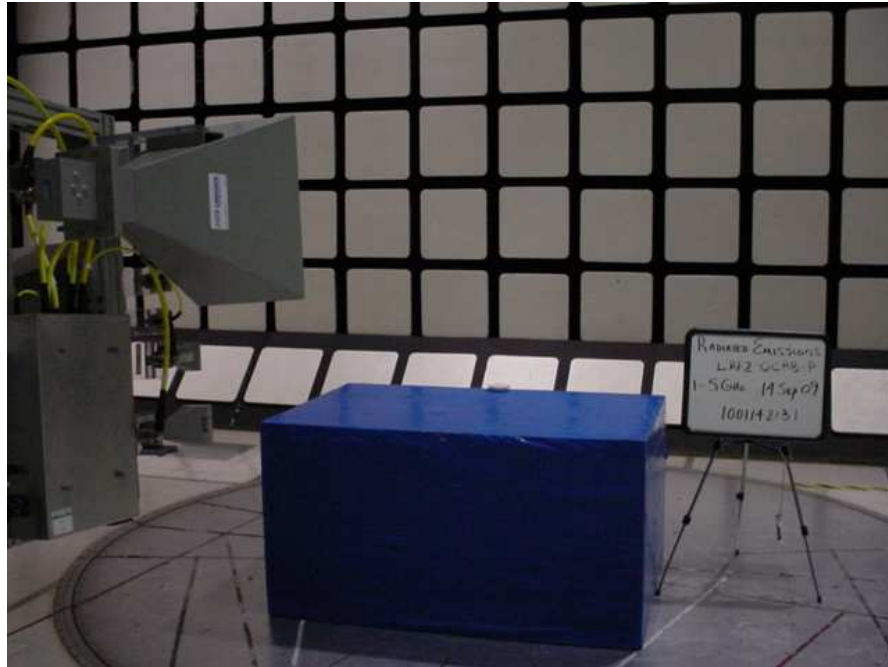
Figure 8 Test setup for Radiated Emissions



9kHz – 30MHz



30MHz – 1000MHz



1GHz – 5GHz

Figure 9 Radiated Emissions Graph

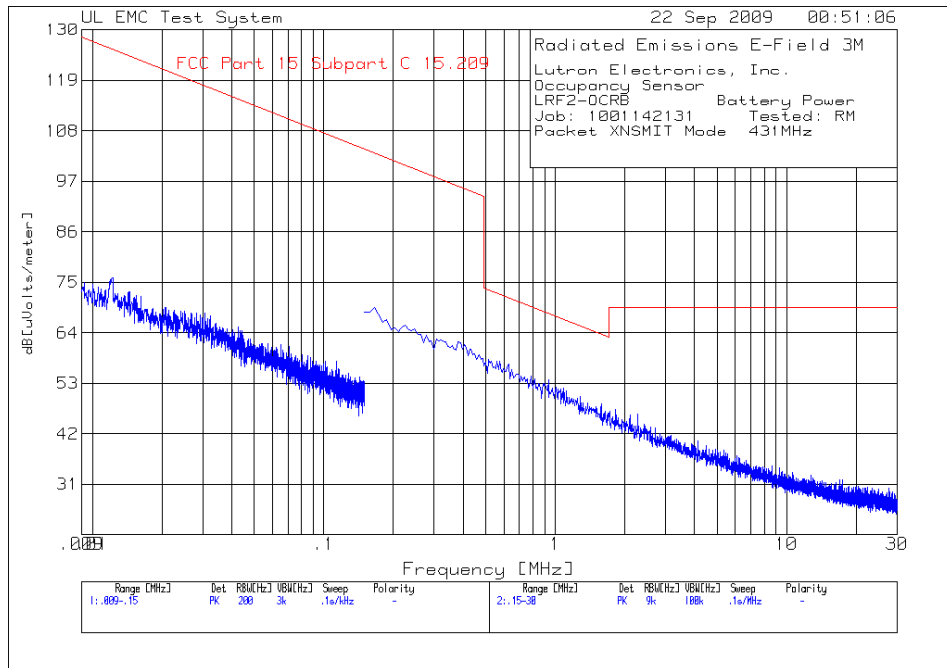
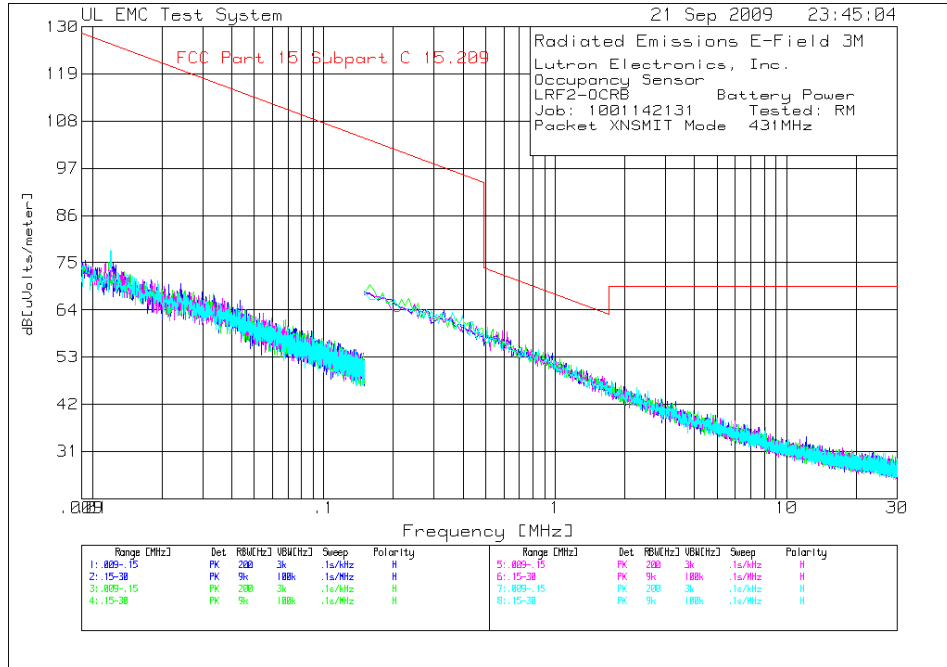


Table 12 Radiated Emissions Data Points

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB Battery Power
 Job: 1001142131 Tested: RM
 Packet XNSMIT Mode 431MHz

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6

0°	.009 - .15MHz										
1	.01227	44.81 pk	.1	29.9	74.81	125.8	-	-	-	-	-
	Azimuth:151	Height:101	Horz	Margin [dB]		-50.99	-	-	-	-	-
2	.02407	45.11 pk	0	25	70.11	120	-	-	-	-	-
	Azimuth:1	Height:101	Horz	Margin [dB]		-49.89	-	-	-	-	-

0°	.15 - 30MHz										
3	.56054	40.94 pk	0	17.1	58.04	72.6	-	-	-	-	-
	Azimuth:183	Height:101	Horz	Margin [dB]		-14.56	-	-	-	-	-
4	12.12284	16.76 pk	.2	17.5	34.46	69.5	-	-	-	-	-
	Azimuth:353	Height:101	Horz	Margin [dB]		-35.04	-	-	-	-	-

45°	.009 - .15MHz										
5	.01368	43.86 pk	0	29.1	72.96	124.9	-	-	-	-	-
	Azimuth:209	Height:119	Horz	Margin [dB]		-51.94	-	-	-	-	-
6	.06858	42.53 pk	0	19.1	61.63	110.9	-	-	-	-	-
	Azimuth:284	Height:119	Horz	Margin [dB]		-49.27	-	-	-	-	-

45°	.15 - 30MHz										
7	.88897	37.26 pk	0	16.9	54.16	68.6	-	-	-	-	-
	Azimuth:85	Height:119	Horz	Margin [dB]		-14.44	-	-	-	-	-
8	6.52457	19.78 pk	.2	17.2	37.18	69.5	-	-	-	-	-
	Azimuth:52	Height:119	Horz	Margin [dB]		-32.32	-	-	-	-	-

90°	.009 - .15MHz										
9	.01143	44.73 pk	-.2	30.3	74.83	126.4	-	-	-	-	-
	Azimuth:2	Height:140	Horz	Margin [dB]		-51.57	-	-	-	-	-
10	.05498	42.81 pk	0	20.3	63.11	112.8	-	-	-	-	-
	Azimuth:284	Height:140	Horz	Margin [dB]		-49.69	-	-	-	-	-

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

pk - Peak detector
 qp - Quasi-Peak detector
 av - Average detector
 avlg - Average log detector
 ave - Average detector

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 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6

90°	.15 - 30MHz	-----									
11	.62026	41.81 pk	0	17	58.81	71.8	-	-	-	-	-
	Azimuth:2	Height:140	Horz	Margin [dB]	-12.99	-	-	-	-	-	-
12	17.36283	13.98 pk	.2	17.6	31.78	69.5	-	-	-	-	-
	Azimuth:111	Height:140	Horz	Margin [dB]	-37.72	-	-	-	-	-	-

135°	.009 - .15MHz	-----									
13	.01199	47.72 pk	.2	30	77.92	126	-	-	-	-	-
	Azimuth:284	Height:160	Horz	Margin [dB]	-48.08	-	-	-	-	-	-
14	.1381	36.55 pk	0	17.8	54.35	104.8	-	-	-	-	-
	Azimuth:134	Height:160	Horz	Margin [dB]	-50.45	-	-	-	-	-	-

135°	.15 - 30MHz	-----									
15	1.42641	32.32 pk	.1	16.7	49.12	64.5	-	-	-	-	-
	Azimuth:0	Height:160	Horz	Margin [dB]	-15.38	-	-	-	-	-	-
16	26.17078	12.55 pk	.3	17.7	30.55	69.5	-	-	-	-	-
	Azimuth:276	Height:160	Horz	Margin [dB]	-38.95	-	-	-	-	-	-

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

pk - Peak detector
 qp - Quasi-Peak detector
 av - Average detector
 avlg - Average log detector
 ave - Average detector

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 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB Battery Power
 Job: 1001142131 Tested: RM
 Packet XNSMIT Mode 431MHz

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
=====											
Range 1 .009 - .15MHz -----											
1	.01227	46.07 pk	.1	29.9	76.07	125.8	-	-	-	-	-
	Azimuth:6			Margin [dB]		-49.73	-	-	-	-	-
2	.04252	43.3 pk	0	21.9	65.2	115	-	-	-	-	-
	Azimuth:208			Margin [dB]		-49.8	-	-	-	-	-
3	.11389	39.79 pk	0	18.1	57.89	106.5	-	-	-	-	-
	Azimuth:133			Margin [dB]		-48.61	-	-	-	-	-

Range 2 .15 - 30MHz -----											
4	.93376	37 pk	0	16.8	53.8	68.2	-	-	-	-	-
	Azimuth:306			Margin [dB]		-14.4	-	-	-	-	-
5	1.58316	31.7 pk	.1	16.7	48.5	63.6	-	-	-	-	-
	Azimuth:93			Margin [dB]		-15.1	-	-	-	-	-
6	2.26988	29.44 pk	.1	16.7	46.24	69.5	-	-	-	-	-
	Azimuth:354			Margin [dB]		-23.26	-	-	-	-	-
7	4.12851	23.49 pk	.1	16.8	40.39	69.5	-	-	-	-	-
	Azimuth:189			Margin [dB]		-29.11	-	-	-	-	-
8	17.37029	14.11 pk	.2	17.6	31.91	69.5	-	-	-	-	-
	Azimuth:266			Margin [dB]		-37.59	-	-	-	-	-

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

pk - Peak detector
 qp - Quasi-Peak detector
 av - Average detector
 avlg - denotes average log detection

Figure 10 Radiated Emissions Graph

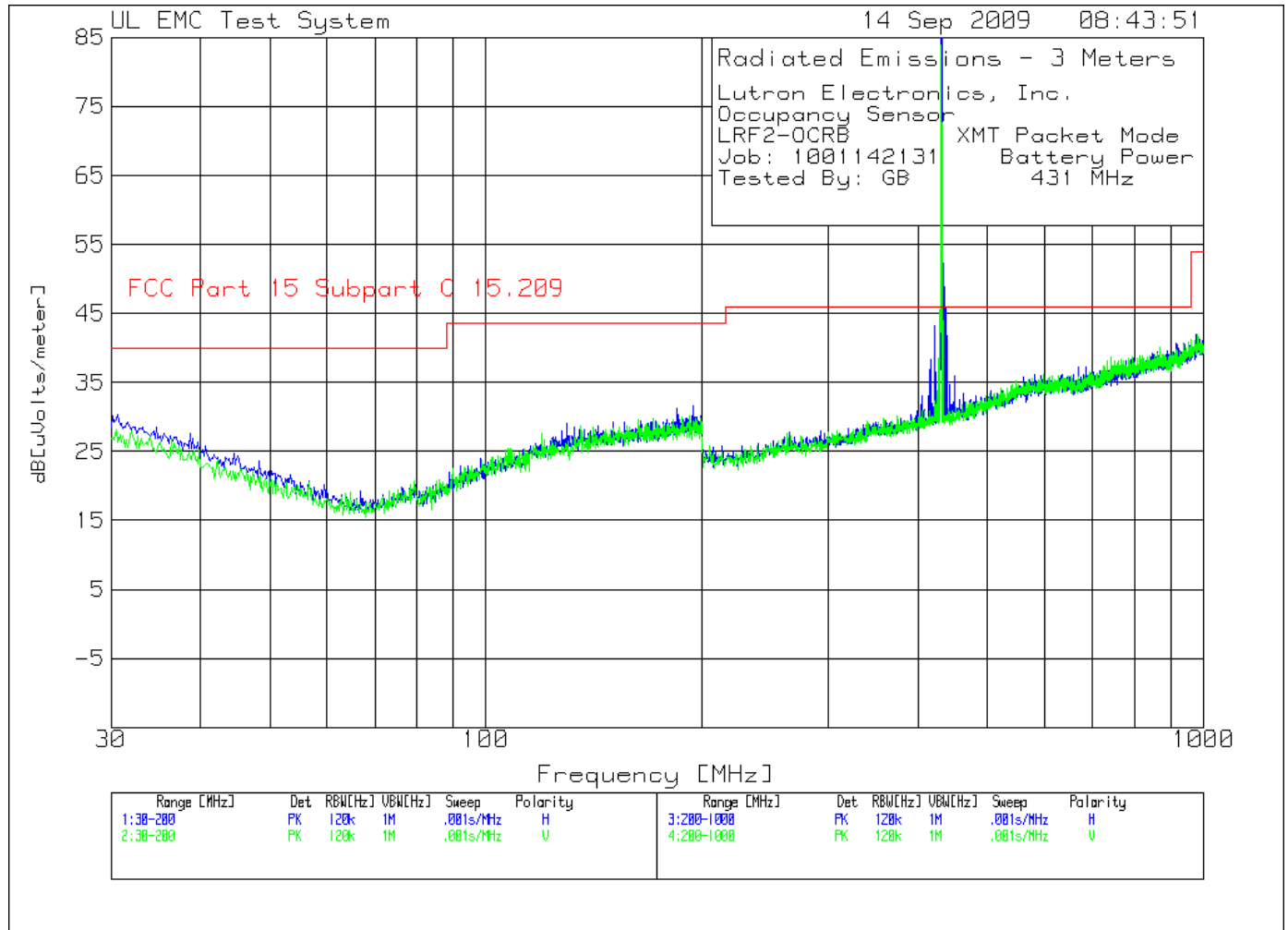


Table 13 Radiated Emissions Data Points

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB XMT Packet Mode
 Job: 1001142131 Battery Power
 Tested By: GB 431 MHz

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6

Horizontal 200 - 1000MHz -----											
1	422.1111	25.33 pk	1.3	16.6	43.23	46	-	-	-	-	-
	Azimuth:233	Height:200	Horz	Margin [dB]		-2.77	-	-	-	-	-
2	430.9155	78.31 pk	1.3	16.7	96.31	46	-	-	-	-	-
	Azimuth:150	Height:100	Horz	Margin [dB]		50.31	-	-	-	-	-
3	432.9165	34.21 pk	1.3	16.8	52.31	46	-	-	-	-	-
	Azimuth:317	Height:200	Horz	Margin [dB]		6.31	-	-	-	-	-
4	434.9175	30.62 pk	1.3	16.9	48.82	46	-	-	-	-	-
	Azimuth:317	Height:300	Horz	Margin [dB]		2.82	-	-	-	-	-
5	435.7179	30.41 pk	1.3	16.9	48.61	46	-	-	-	-	-
	Azimuth:344	Height:200	Horz	Margin [dB]		2.61	-	-	-	-	-
6	437.3187	27.39 pk	1.3	17	45.69	46	-	-	-	-	-
	Azimuth:275	Height:200	Horz	Margin [dB]		-.31	-	-	-	-	-
7	438.9195	23.37 pk	1.3	17.1	41.77	46	-	-	-	-	-
	Azimuth:25	Height:100	Horz	Margin [dB]		-4.23	-	-	-	-	-

Vertical 200 - 1000MHz -----											
8	431.3157	43.87 pk	1.3	16.4	61.57	46	-	-	-	-	-
	Azimuth:234	Height:100	Vert	Margin [dB]		15.57	-	-	-	-	-
9	429.7149	29.49 pk	1.3	16.4	47.19	46	-	-	-	-	-
	Azimuth:67	Height:100	Vert	Margin [dB]		1.19	-	-	-	-	-
10	433.3167	26.11 pk	1.3	16.5	43.91	46	-	-	-	-	-
	Azimuth:67	Height:100	Vert	Margin [dB]		-2.09	-	-	-	-	-

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

pk - Peak detector
 qp - Quasi-Peak detector
 av - Average detector
 avlg - denotes average log detection

Job Number: 1001142131 File Number: MC15896 Page 34 of 54
 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB XMT Packet Mode
 Job: 1001142131 Battery Power
 Tested By: GB 431 MHz

Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
Horizontal 200 - 1000MHz										
431	80.24 pk	1.3	16.7	77.84*	-	80.7	-	-	-	-
Azimuth: 50		Height:230		Horz		Margin [dB]:		-2.86	-	-
422.1	8.19 qp	1.3	16.6	26.09	46	-	-	-	-	-
Azimuth: 79		Height:101		Horz		Margin [dB]:		-19.91	-	-
432.9	20.48 qp	1.3	16.8	38.58	46	-	-	-	-	-
Azimuth: 81		Height:218		Horz		Margin [dB]:		-7.42	-	-
434.9	9.25 qp	1.3	16.9	27.45	46	-	-	-	-	-
Azimuth: 114		Height:194		Horz		Margin [dB]:		-18.55	-	-
435.7	9.44 qp	1.3	16.9	27.64	46	-	-	-	-	-
Azimuth: 21		Height:225		Horz		Margin [dB]:		-18.36	-	-
437.4	8.52 qp	1.3	17	26.82	46	-	-	-	-	-
Azimuth: 39		Height:227		Horz		Margin [dB]:		-19.18	-	-
438.9	8.19 qp	1.3	17.1	26.59	46	-	-	-	-	-
Azimuth: 0		Height:201		Horz		Margin [dB]:		-19.41	-	-
Vertical 200 - 1000MHz										
431	69.67 pk	1.3	16.4	66.97*	-	80.7	-	-	-	-
Azimuth: 42		Height:150		Vert		Margin [dB]:		-13.73	-	-
429.7	11.4 qp	1.3	16.4	29.1	46	-	-	-	-	-
Azimuth: 306		Height:255		Vert		Margin [dB]:		-16.9	-	-
433.3	7.96 qp	1.3	16.5	25.76	46	-	-	-	-	-
Azimuth: 61		Height:183		Vert		Margin [dB]:		-20.24	-	-

***Duty Cycle correction factor of 20.4 applied (see section 4.4 of report for calculation)**

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: FCC Part 15 Subpart C 15.231
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

pk - Peak detector
 qp - Quasi-Peak detector
 av - Average detector
 avlg - Average log detector
 ave - Average detector

Figure 11 Radiated Emissions Graph

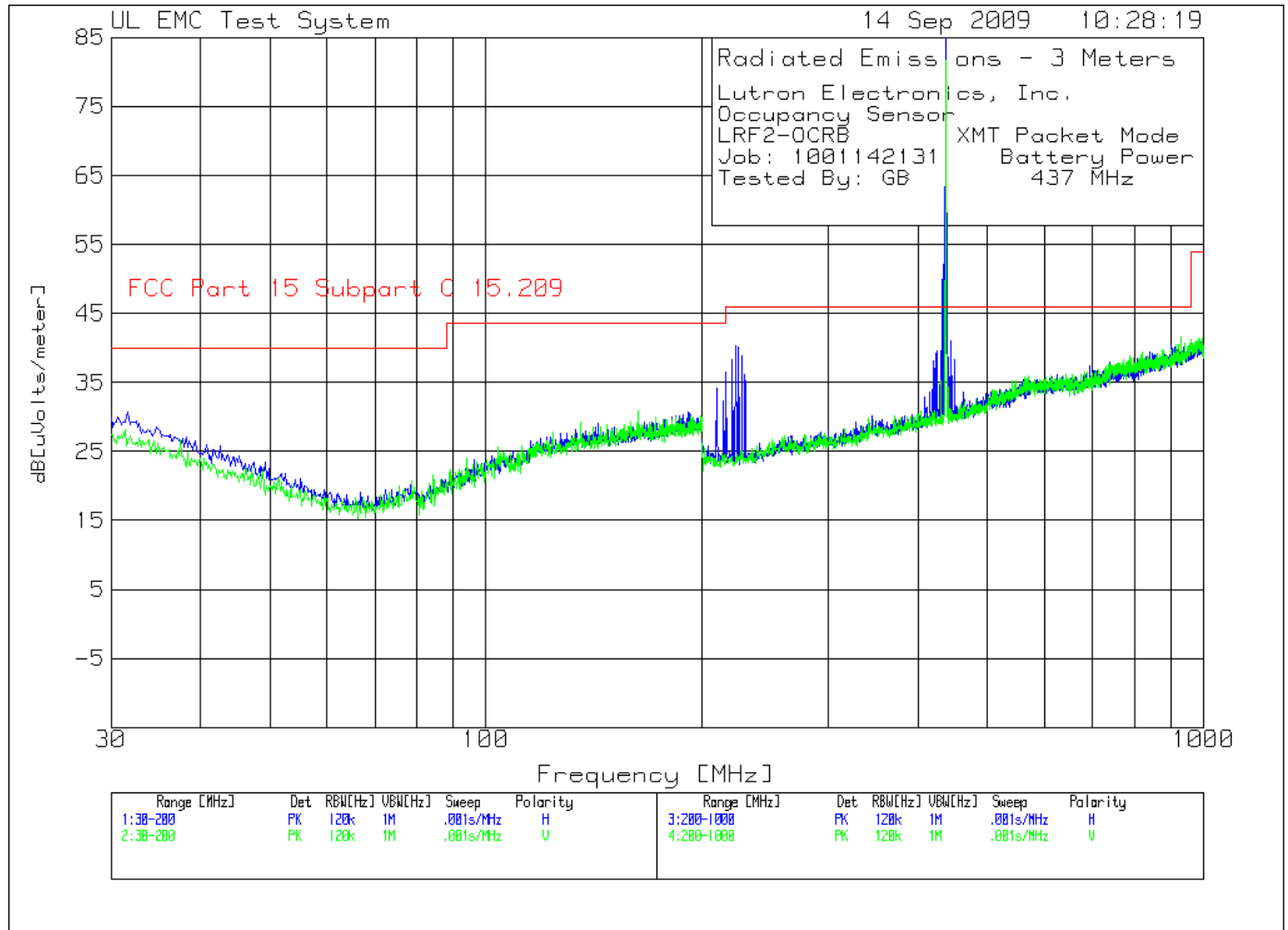


Table 14 Radiated Emissions Data Points

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB XMT Packet Mode
 Job: 1001142131 Battery Power
 Tested By: GB 437 MHz

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6

Horizontal 200 - 1000MHz -----											
1	222.8114	27.66 pk	.9	11.7	40.26	46	-	-	-	-	-
	Azimuth:228	Height:300	Horz	Margin [dB]		-5.74	-	-	-	-	-
2	224.8124	27.55 pk	.9	11.7	40.15	46	-	-	-	-	-
	Azimuth:16	Height:300	Horz	Margin [dB]		-5.85	-	-	-	-	-
3	431.3157	25.88 pk	1.3	16.8	43.98	46	-	-	-	-	-
	Azimuth:233	Height:300	Horz	Margin [dB]		-2.02	-	-	-	-	-
4	432.1161	31.84 pk	1.3	16.8	49.94	46	-	-	-	-	-
	Azimuth:16	Height:200	Horz	Margin [dB]		3.94	-	-	-	-	-
5	433.7169	33.96 pk	1.3	16.8	52.06	46	-	-	-	-	-
	Azimuth:344	Height:100	Horz	Margin [dB]		6.06	-	-	-	-	-
6	434.9175	27.06 pk	1.3	16.9	45.26	46	-	-	-	-	-
	Azimuth:275	Height:200	Horz	Margin [dB]		-.74	-	-	-	-	-
7	436.9185	78.22 pk	1.3	17	96.52	46	-	-	-	-	-
	Azimuth:275	Height:200	Horz	Margin [dB]		50.52	-	-	-	-	-
8	438.5193	41.24 pk	1.3	17	59.54	46	-	-	-	-	-
	Azimuth:347	Height:200	Horz	Margin [dB]		13.54	-	-	-	-	-
9	439.3197	32.49 pk	1.3	17.1	50.89	46	-	-	-	-	-
	Azimuth:344	Height:100	Horz	Margin [dB]		4.89	-	-	-	-	-
10	443.7219	22.57 pk	1.3	17.2	41.07	46	-	-	-	-	-
	Azimuth:358	Height:100	Horz	Margin [dB]		-4.93	-	-	-	-	-

Vertical 200 - 1000MHz -----											
11	435.3177	24.28 pk	1.3	16.5	42.08	46	-	-	-	-	-
	Azimuth:108	Height:200	Vert	Margin [dB]		-3.92	-	-	-	-	-
12	436.9185	63.9 pk	1.3	16.5	81.7	46	-	-	-	-	-
	Azimuth:343	Height:200	Vert	Margin [dB]		35.7	-	-	-	-	-

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

pk - Peak detector
 qp - Quasi-Peak detector
 av - Average detector
 avlg - denotes average log detection

Job Number: 1001142131 File Number: MC15896 Page 37 of 54
 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB XMT Packet Mode
 Job: 1001142131 Battery Power
 Tested By: GB 437 MHz

Test	Meter	Gain/Loss	Transducer	Level	Limit:1	2	3	4	5	6
Frequency	Reading	Factor	Factor	dB[uVolts/meter]						
[MHz]	[dB(uV)]	[dB]	[dB]							
=====										
Horizontal	200 - 1000MHz									
436.9248	78.04 pk	1.3	17	75.94*	-	80.9	-	-	-	-
Azimuth: 49	Height:222	Horz		Margin [dB]:	-	-4.96	-	-	-	-
222.8	7.23 qp	.9	11.7	19.83	46	-	-	-	-	-
Azimuth: 294	Height:374	Horz		Margin [dB]:	-26.17	-	-	-	-	-
226.1727	7.23 qp	.9	11.7	19.83	46	-	-	-	-	-
Azimuth: 72	Height:116	Horz		Margin [dB]:	-26.17	-	-	-	-	-
431.3	9.39 qp	1.3	16.8	27.49	46	-	-	-	-	-
Azimuth: 61	Height:209	Horz		Margin [dB]:	-18.51	-	-	-	-	-
432.1	9.04 qp	1.3	16.8	27.14	46	-	-	-	-	-
Azimuth: 178	Height:100	Horz		Margin [dB]:	-18.86	-	-	-	-	-
433.7	9.87 qp	1.3	16.8	27.97	46	-	-	-	-	-
Azimuth: 178	Height:100	Horz		Margin [dB]:	-18.03	-	-	-	-	-
434.9	20.28 qp	1.3	16.9	38.48	46	-	-	-	-	-
Azimuth: 163	Height:199	Horz		Margin [dB]:	-7.52	-	-	-	-	-
438.5	19.55 qp	1.3	17	37.85	46	-	-	-	-	-
Azimuth: 197	Height:254	Horz		Margin [dB]:	-8.15	-	-	-	-	-
439.2212	17.69 qp	1.3	17.1	36.09	46	-	-	-	-	-
Azimuth: 101	Height:222	Horz		Margin [dB]:	-9.91	-	-	-	-	-
443.7162	16.9 qp	1.3	17.2	35.4	46	-	-	-	-	-
Azimuth: 45	Height:117	Horz		Margin [dB]:	-10.6	-	-	-	-	-

***Duty Cycle correction factor of 20.4 applied (see section 4.4 of report for calculation)**

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: FCC Part 15 Subpart C 15.231
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

pk - Peak detector
 qp - Quasi-Peak detector
 av - Average detector
 avlg - Average log detector
 ave - Average detector

Job Number: 1001142131 File Number: MC15896 Page 38 of 54
 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

Test	Meter	Gain/Loss	Transducer	Level	Limit:1	2	3	4	5	6
Frequency	Reading	Factor	Factor	dB[uVolts/meter]						
[MHz]	[dB(uV)]	[dB]	[dB]							
=====										
Vertical	200 - 1000MHz									
437	69.04 pk	1.3	16.5	66.44*	-	80.9	-	-	-	-
Azimuth: 144	Height:249	Vert		Margin [dB]:	-	-14.46	-	-	-	-
435.2	15.39 qp	1.3	16.5	33.19	46	-	-	-	-	-
Azimuth: 132	Height:289	Vert		Margin [dB]:	-12.81	-	-	-	-	-

***Duty Cycle correction factor of 20.4 applied (see section 4.4 of report for calculation)**

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: FCC Part 15 Subpart C 15.231
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

pk - Peak detector
 qp - Quasi-Peak detector
 av - Average detector
 avlg - Average log detector
 ave - Average detector

Figure 12 Radiated Emissions Graph

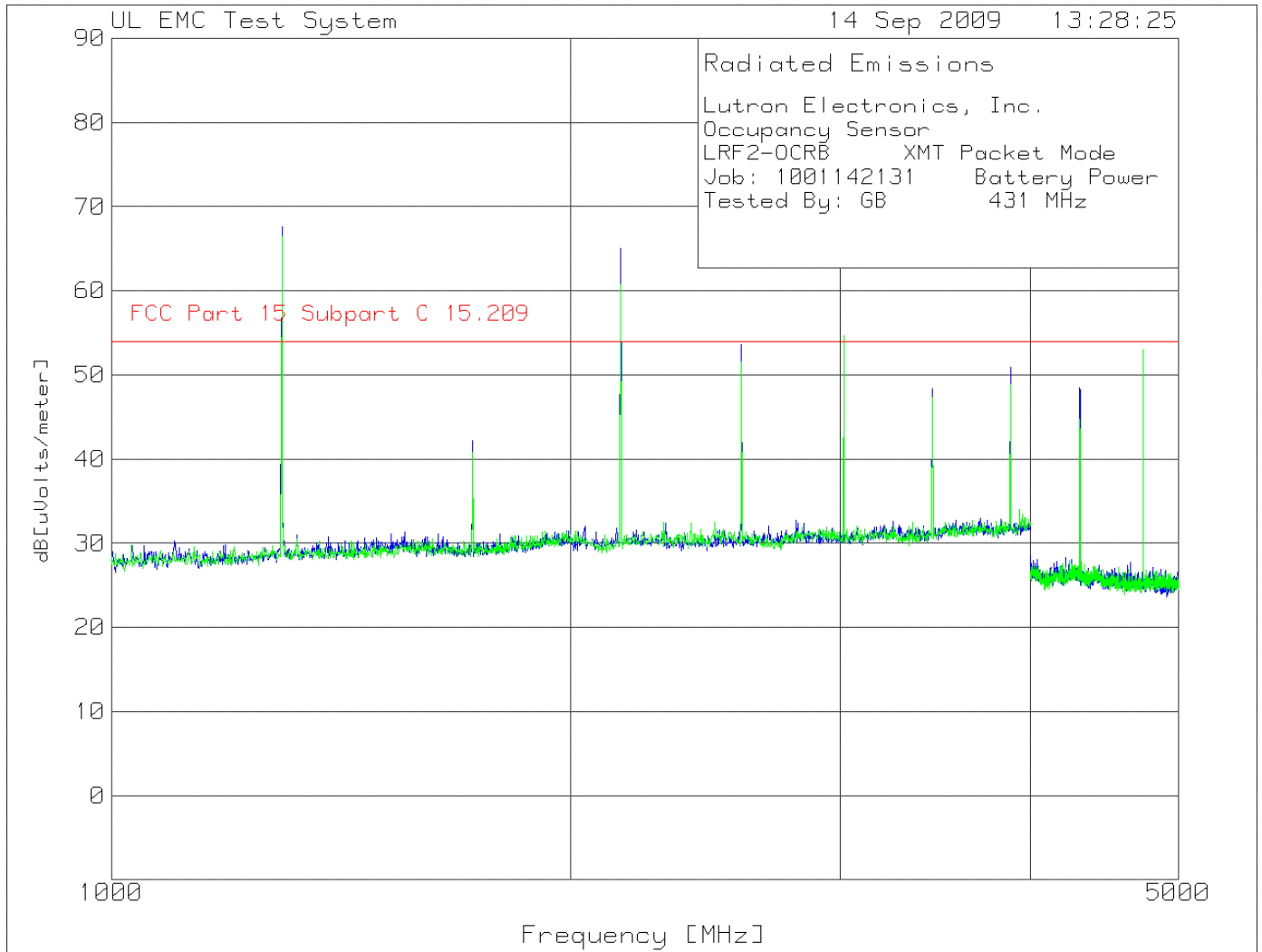


Table 15 Radiated Emissions Data Points

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB XMT Packet Mode
 Job: 1001142131 Battery Power
 Tested By: GB 431 MHz

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6

Horizontal 1000 - 2000MHz -----											
1	1293.383	92.66 pk	-45.59	20.5	67.57	54	-	-	-	-	-
		Height:150	Horz	Margin [dB]		13.57	-	-	-	-	-

Horizontal 2000 - 4000MHz -----											
2	2154.806	87.55 pk	-43.92	21.4	65.03	54	-	-	-	-	-
		Height:100	Horz	Margin [dB]		11.03	-	-	-	-	-
3	2586.767	75.85 pk	-43.55	21.3	53.6	54	-	-	-	-	-
		Height:149	Horz	Margin [dB]		-.4	-	-	-	-	-
4	3018.727	75.62 pk	-42.88	21.5	54.24	54	-	-	-	-	-
		Height:199	Horz	Margin [dB]		.24	-	-	-	-	-
5	3448.19	69.07 pk	-42.83	22.1	48.34	54	-	-	-	-	-
		Height:199	Horz	Margin [dB]		-5.66	-	-	-	-	-
6	3880.15	71.27 pk	-42.9	22.6	50.97	54	-	-	-	-	-
		Height:199	Horz	Margin [dB]		-3.03	-	-	-	-	-

Horizontal 4000 - 5000MHz -----											
7	4309.484	74.09 pk	-53.3	27.7	48.49	54	-	-	-	-	-
		Height:200	Horz	Margin [dB]		-5.51	-	-	-	-	-

Vertical 1000 - 2000MHz -----											
8	1293.383	91.56 pk	-45.59	20.5	66.47	54	-	-	-	-	-
		Height:200	Vert	Margin [dB]		12.47	-	-	-	-	-

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

PK - Peak detector
 QP - Quasi-Peak detector
 av - Linear average detector
 avlg - Average log detector
 AV - Average detector
 CAV - CISPR Average detector
 RMS - RMS detection
 CRMS - CISPR RMS detection

Job Number: 1001142131 File Number: MC15896 Page 41 of 54
 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
Vertical 2000 - 4000MHz -----											
9	2154.806	83.61 pk	-43.92	21	60.69	54	-	-	-	-	-
		Height:200 Vert		Margin [dB]		6.69	-	-	-	-	-
10	2586.767	73.54 pk	-43.55	21.5	51.49	54	-	-	-	-	-
		Height:200 Vert		Margin [dB]		-2.51	-	-	-	-	-
11	3018.727	75.78 pk	-42.88	21.7	54.6	54	-	-	-	-	-
		Height:200 Vert		Margin [dB]		.6	-	-	-	-	-
12	3450.687	67.91 pk	-42.81	22.2	47.3	54	-	-	-	-	-
		Height:200 Vert		Margin [dB]		-6.7	-	-	-	-	-
13	3880.15	69.17 pk	-42.9	22.6	48.87	54	-	-	-	-	-
		Height:200 Vert		Margin [dB]		-5.13	-	-	-	-	-
Vertical 4000 - 5000MHz -----											
14	4309.484	70.25 pk	-53.3	27.8	44.75	54	-	-	-	-	-
		Height:150 Vert		Margin [dB]		-9.25	-	-	-	-	-
15	4741.265	80.38 pk	-54.49	27.1	52.99	54	-	-	-	-	-
		Height:199 Vert		Margin [dB]		-1.01	-	-	-	-	-

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

PK - Peak detector
 QP - Quasi-Peak detector
 av - Linear average detector
 avlg - Average log detector
 AV - Average detector
 CAV - CISPR Average detector
 RMS - RMS detection
 CRMS - CISPR RMS detection

Job Number: 1001142131 File Number: MC15896 Page 42 of 54
 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB XMT Packet Mode
 Job: 1001142131 Battery Power
 Tested By: GB 431 MHz

Test	Meter	Gain/Loss	Transducer	Level	Limit:1	2	3	4	5	6
Frequency	Reading	Factor	Factor	dB[uVolts/meter]						
[MHz]	[dB(uV)]	[dB]	[dB]							
=====										
Horizontal 1000 - 2000MHz										
1292.8675	93.16 PK	-45.6	20.5	47.66*	-	60.9	-	-	-	-
Azimuth: 358 Height:246 Horz					Margin [dB]:	-	-13.24	-	-	-
Horizontal 2000 - 4000MHz										
2155.206	86.33 PK	-43.91	21.4	43.42*	-	60.9	-	-	-	-
Azimuth: 350 Height:320 Horz					Margin [dB]:	-	-17.48	-	-	-
2585.75	74.63 PK	-43.55	21.3	52.38	-	60.9	-	-	-	-
Azimuth: 89 Height:164 Horz					Margin [dB]:	-	-8.52	-	-	-
3016.7175	78.05 PK	-42.91	21.5	56.64	-	60.9	-	-	-	-
Azimuth: 215 Height:287 Horz					Margin [dB]:	-	-4.26	-	-	-
3447.6875	70.35 PK	-42.83	22.1	49.62	-	60.9	-	-	-	-
Azimuth: 326 Height:352 Horz					Margin [dB]:	-	-11.28	-	-	-
3878.625	69.39 PK	-42.93	22.6	49.06	54	-	-	-	-	-
Azimuth: 305 Height:280 Horz					Margin [dB]:	-4.94	-	-	-	-
Horizontal 4000 - 5000MHz										
4740.56	44.75 PK	-54.5	27.2	17.45	54	-	-	-	-	-
Azimuth: 1 Height:309 Horz					Margin [dB]:	-36.55	-	-	-	-
4309.575	75.66 PK	-53.31	27.7	50.05	54	-	-	-	-	-
Azimuth: 263 Height:325 Horz					Margin [dB]:	-3.95	-	-	-	-
Vertical 1000 - 2000MHz										
1292.8	80.46 PK	-45.6	20.4	55.26	-	60.9	-	-	-	-
Azimuth: 2 Height:163 Vert					Margin [dB]:	-	-5.64	-	-	-
1725	52.6 PK	-45.07	20.8	28.33	-	60.9	-	-	-	-
Azimuth: 37 Height:140 Vert					Margin [dB]:	-	-32.57	-	-	-

***Duty Cycle correction factor of 20.4 applied (see section 4.4 of report for calculation)**

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: FCC Part 15 Subpart C 15.231
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

PK - Peak detector (Maximized)
 QP - Quasi-Peak detector
 av - Linear average detector
 avlg - Average log detector
 AV - Average detector
 CAV - CISPR Average detector
 RMS - RMS detection
 CRMS - CISPR RMS detection

Job Number: 1001142131 File Number: MC15896 Page 43 of 54
 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

Test	Meter	Gain/Loss	Transducer	Level	Limit:1	2	3	4	5	6
Frequency	Reading	Factor	Factor	dB[uVolts/meter]						
[MHz]	[dB(uV)]	[dB]	[dB]							
=====										
Vertical 2000 - 4000MHz										
2155	82.85 PK	-43.91	21	59.94	-	60.9	-	-	-	-
Azimuth: 254	Height:194	Vert		Margin [dB]:	-	-0.96	-	-	-	-
2585.75	75.34 PK	-43.55	21.5	53.29	-	60.9	-	-	-	-
Azimuth: 2	Height:396	Vert		Margin [dB]:	-	-7.61	-	-	-	-
3017	75.02 PK	-42.91	21.7	53.81	-	60.9	-	-	-	-
Azimuth: 2	Height:341	Vert		Margin [dB]:	-	-7.09	-	-	-	-
3879	66.57 PK	-42.92	22.6	46.25	54	-	-	-	-	-
Azimuth: 2	Height:262	Vert		Margin [dB]:	-7.75	-	-	-	-	-
Vertical 4000 - 5000MHz										
4740.5375	82.21 PK	-54.5	27.1	34.41*	54	-	-	-	-	-
Azimuth: 9	Height:330	Vert		Margin [dB]:	-19.59	-	-	-	-	-

***Duty Cycle correction factor of 20.4 applied (see section 4.4 of report for calculation)**

- LIMIT 1: FCC Part 15 Subpart C 15.209
- LIMIT 2: FCC Part 15 Subpart C 15.231
- LIMIT 3: NONE
- LIMIT 4: NONE
- LIMIT 5: NONE
- LIMIT 6: NONE

- PK - Peak detector (Maximized)
- QP - Quasi-Peak detector
- av - Linear average detector
- avlg - Average log detector
- AV - Average detector
- CAV - CISPR Average detector
- RMS - RMS detection
- CRMS - CISPR RMS detection

Figure 13 Radiated Emissions Graph

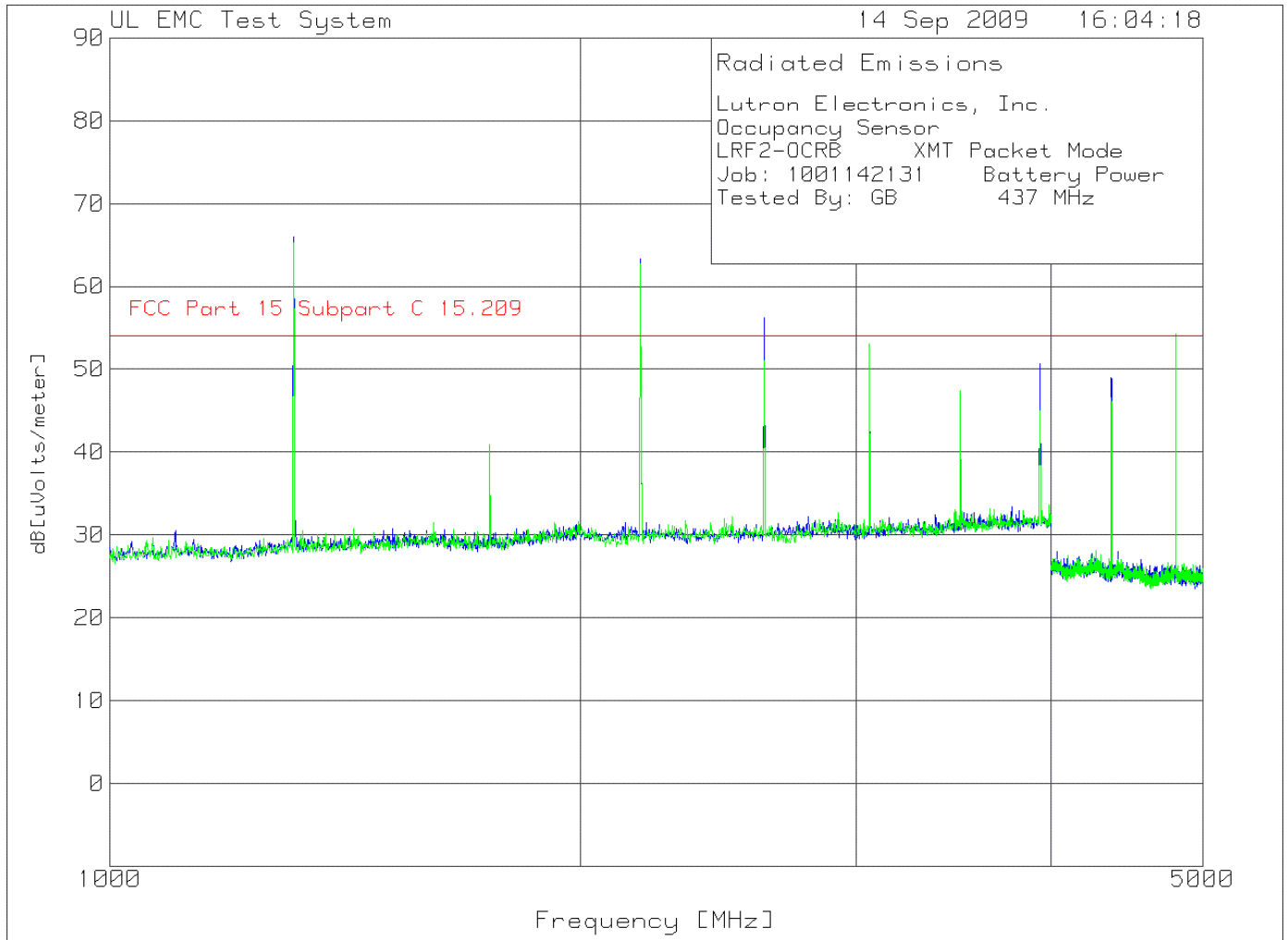


Table 16 Radiated Emissions Data Points

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB XMT Packet Mode
 Job: 1001142131 Battery Power
 Tested By: GB 437 MHz

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6

Horizontal 1000 - 2000MHz -----											
1	1310.861	91.17 pk	-45.73	20.5	65.94	54	-	-	-	-	-
		Height:150 Horz		Margin [dB]		11.94	-	-	-	-	-
2	1749.064	64.79 pk	-45.01	20.8	40.58	54	-	-	-	-	-
		Height:150 Horz		Margin [dB]		-13.42	-	-	-	-	-

Horizontal 2000 - 4000MHz -----											
3	2184.769	85.89 pk	-44.02	21.5	63.37	54	-	-	-	-	-
		Height:200 Horz		Margin [dB]		9.37	-	-	-	-	-
4	2621.723	78.23 pk	-43.42	21.4	56.21	54	-	-	-	-	-
		Height:100 Horz		Margin [dB]		2.21	-	-	-	-	-
5	3061.174	74.36 pk	-42.93	21.6	53.03	54	-	-	-	-	-
		Height:149 Horz		Margin [dB]		-.97	-	-	-	-	-
6	3498.127	67.57 pk	-42.85	22.2	46.92	54	-	-	-	-	-
		Height:100 Horz		Margin [dB]		-7.08	-	-	-	-	-
7	3935.081	70.73 pk	-42.8	22.7	50.63	54	-	-	-	-	-
		Height:100 Horz		Margin [dB]		-3.37	-	-	-	-	-

Horizontal 4000 - 5000MHz -----											
8	4370.216	75.05 pk	-53.68	27.6	48.97	54	-	-	-	-	-
		Height:150 Horz		Margin [dB]		-5.03	-	-	-	-	-
9	4806.988	77.93 pk	-54.34	27.1	50.69	54	-	-	-	-	-
		Height:200 Horz		Margin [dB]		-3.31	-	-	-	-	-

Vertical 1000 - 2000MHz -----											
10	1310.861	90.51 pk	-45.73	20.5	65.28	54	-	-	-	-	-
		Height:199 Vert		Margin [dB]		11.28	-	-	-	-	-
11	1749.064	65.1 pk	-45.01	20.8	40.89	54	-	-	-	-	-
		Height:149 Vert		Margin [dB]		-13.11	-	-	-	-	-

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

PK - Peak detector
 QP - Quasi-Peak detector
 av - Linear average detector
 avlg - Average log detector
 AV - Average detector
 CAV - CISPR Average detector
 RMS - RMS detection
 CRMS - CISPR RMS detection

Job Number: 1001142131 File Number: MC15896 Page 46 of 54
 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
Vertical 2000 - 4000MHz -----											
12	2184.769	85.57 pk	-44.02	21.2	62.75	54	-	-	-	-	-
		Height:100 Vert		Margin [dB]		8.75	-	-	-	-	-
13	2621.723	73.08 pk	-43.42	21.4	51.06	54	-	-	-	-	-
		Height:200 Vert		Margin [dB]		-2.94	-	-	-	-	-
14	3061.174	74.24 pk	-42.93	21.8	53.11	54	-	-	-	-	-
		Height:150 Vert		Margin [dB]		-.89	-	-	-	-	-
15	3498.127	67.89 pk	-42.85	22.4	47.44	54	-	-	-	-	-
		Height:200 Vert		Margin [dB]		-6.56	-	-	-	-	-
16	3935.081	65.11 pk	-42.8	22.7	45.01	54	-	-	-	-	-
		Height:200 Vert		Margin [dB]		-8.99	-	-	-	-	-
Vertical 4000 - 5000MHz -----											
17	4370.216	72.52 pk	-53.68	27.7	46.54	54	-	-	-	-	-
		Height:199 Vert		Margin [dB]		-7.46	-	-	-	-	-
18	4807.82	81.37 pk	-54.36	27.3	54.31	54	-	-	-	-	-
		Height:199 Vert		Margin [dB]		.31	-	-	-	-	-

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

PK - Peak detector
 QP - Quasi-Peak detector
 av - Linear average detector
 avlg - Average log detector
 AV - Average detector
 CAV - CISPR Average detector
 RMS - RMS detection
 CRMS - CISPR RMS detection

Job Number: 1001142131 File Number: MC15896 Page 47 of 54
 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB XMT Packet Mode
 Job: 1001142131 Battery Power
 Tested By: GB 437 MHz

Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level Limit:1 dB[uVolts/meter]	2	3	4	5	6
Horizontal 1000 - 2000MHz									
1311.1275	93.02 PK	-45.74	20.5	47.78*	-	60.9	-	-	-
Azimuth: 341 Height:240 Horz					Margin [dB]:	-	-13.12	-	-
1748.165	68.57 PK	-45.04	20.8	44.33	-	60.9	-	-	-
Azimuth: 189 Height:375 Horz					Margin [dB]:	-	-16.57	-	-
Horizontal 2000 - 4000MHz									
2184.7775	91.81 PK	-44.02	21.5	48.89*	-	60.9	-	-	-
Azimuth: 127 Height:360 Horz					Margin [dB]:	-	-12.01	-	-
2621.758	79.84 PK	-43.42	21.4	57.82	-	60.9	-	-	-
Azimuth: 200 Height:399 Horz					Margin [dB]:	-	-3.08	-	-
3058.718	77.32 PK	-42.95	21.6	55.97	-	60.9	-	-	-
Azimuth: 206 Height:347 Horz					Margin [dB]:	-	-4.93	-	-
3495.645	70.09 PK	-42.87	22.2	49.42	-	60.9	-	-	-
Azimuth: 308 Height:338 Horz					Margin [dB]:	-	-11.48	-	-
3932.61	72.67 PK	-42.76	22.7	52.61	54	-	-	-	-
Azimuth: 216 Height:322 Horz					Margin [dB]:	-1.39	-	-	-
Horizontal 4000 - 5000MHz									
4370.421	77.64 PK	-53.68	27.6	51.56	54	-	-	-	-
Azimuth: 248 Height:334 Horz					Margin [dB]:	-2.44	-	-	-
4807.458	81.58 PK	-54.35	27.1	33.93*	54	-	-	-	-
Azimuth: 323 Height:342 Horz					Margin [dB]:	-20.07	-	-	-

***Duty Cycle correction factor of 20.4 applied (see section 4.4 of report for calculation)**

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: FCC Part 15 Subpart C 15.231
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

PK - Peak detector (Maximized)
 QP - Quasi-Peak detector
 av - Linear average detector
 avlg - Average log detector
 AV - Average detector
 CAV - CISPR Average detector
 RMS - RMS detection
 CRMS - CISPR RMS detection

Job Number: 1001142131 File Number: MC15896 Page 48 of 54
 Model Number: LRF2-OCRB-P-xx
 Client Name: LUTRON ELECTRONICS INC
 FCC ID: JPZ0061 IC Number 2851A-PZ0061

Test	Meter	Gain/Loss	Transducer	Level	Limit:1	2	3	4	5	6
Frequency	Reading	Factor	Factor	dB[uVolts/meter]						
[MHz]	[dB(uV)]	[dB]	[dB]							
=====										
Vertical 1000 - 2000MHz										
1310.876	89.78 PK	-45.73	20.5	44.15*	-	60.9	-	-	-	-
Azimuth: 46 Height:116 Vert					Margin [dB]:	-	-16.75	-	-	-
1747.842	67.92 PK	-45.07	20.8	43.65	-	60.9	-	-	-	-
Azimuth: 310 Height:137 Vert					Margin [dB]:	-	-17.25	-	-	-
Vertical 2000 - 4000MHz										
2184.787	88.72 PK	-44.02	21.2	45.5*	-	60.9	-	-	-	-
Azimuth: 230 Height:349 Vert					Margin [dB]:	-	-15.4	-	-	-
2621.763	77.99 PK	-43.42	21.4	55.97	-	60.9	-	-	-	-
Azimuth: 138 Height:338 Vert					Margin [dB]:	-	-4.93	-	-	-
3058.7	77.21 PK	-42.95	21.8	56.06	-	60.9	-	-	-	-
Azimuth: 346 Height:346 Vert					Margin [dB]:	-	-4.84	-	-	-
3495.6645	73.66 PK	-42.87	22.4	53.19	-	60.9	-	-	-	-
Azimuth: 7 Height:376 Vert					Margin [dB]:	-	-7.71	-	-	-
3932.631	69.98 PK	-42.76	22.7	49.92	54	-	-	-	-	-
Azimuth: 353 Height:382 Vert					Margin [dB]:	-4.08	-	-	-	-
Vertical 4000 - 5000MHz										
4369.591	75.21 PK	-53.69	27.7	49.22	54	-	-	-	-	-
Azimuth: 340 Height:389 Vert					Margin [dB]:	-4.78	-	-	-	-
4807.46	83.33 PK	-54.35	27.3	35.88*	54	-	-	-	-	-
Azimuth: 5 Height:313 Vert					Margin [dB]:	-18.12	-	-	-	-

***Duty Cycle correction factor of 20.4 applied (see section 4.4 of report for calculation)**

LIMIT 1: FCC Part 15 Subpart C 15.209
 LIMIT 2: FCC Part 15 Subpart C 15.231
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

PK - Peak detector (Maximized)
 QP - Quasi-Peak detector
 av - Linear average detector
 avlg - Average log detector
 AV - Average detector
 CAV - CISPR Average detector
 RMS - RMS detection
 CRMS - CISPR RMS detection

4.5 Test Conditions and Results – RADIATED EMISSIONS

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.	
Basic Standard	FCC Part 15, Subpart B 15.109	
UL LPG	80-EM-S0029	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	(3 meter measurement distance)
Limits - Class B		
Frequency (MHz)	Limit (dBµV/m)	
	Quasi-Peak	Average
30 to 88	40	NA
88 to 216	43.5	NA
216 to 960	46	NA
960 to 1000	54	NA
Supplementary information: None		

Table 17 Radiated Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	5
Supplementary information: None		

Table 18 Radiated Emissions Test Equipment

Test Equipment Used			
Description	Manufacturer	Model	Identifier
30-1000MHz			
EMI Receiver	Rohde & Schwarz	ESIB40	34968
Bicon Antenna	Schaffner	VBA6106A	43441
Log-P Antenna	Schaffner	UPA6109	44068
Switch Driver	HP	11713A	ME7A-627
System Controller	Sunol Sciences	SC99V	44396
Camera Controller	Panasonic	WV-CU254	44395
RF Switch Box	UL	1	44398
Measurement Software	UL	Version 9.3	44740
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268

Figure 14 Test setup for Radiated Emissions



Figure 15 Radiated Emissions Graph

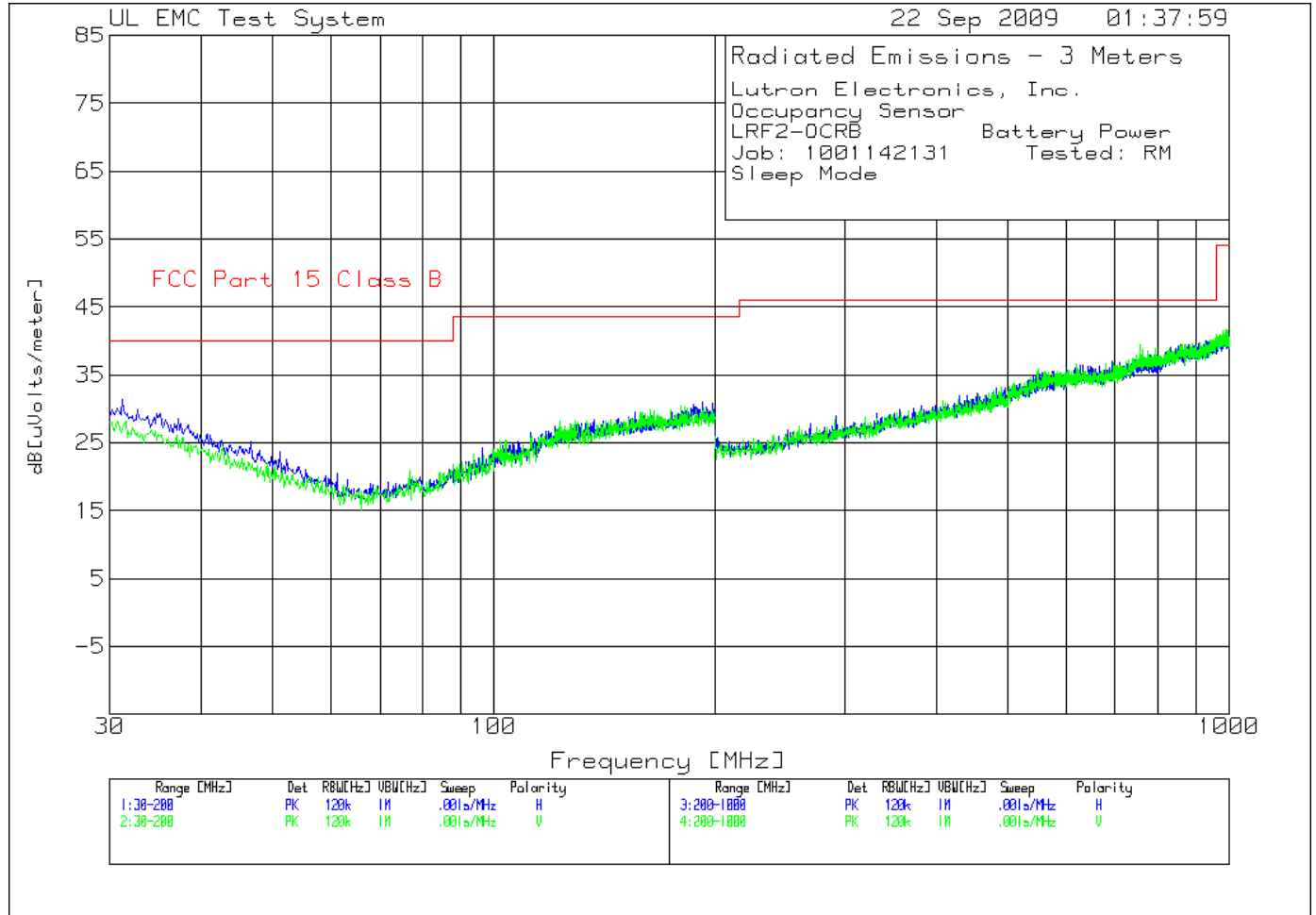


Table 19 Radiated Emissions Data Points

Lutron Electronics, Inc.
 Occupancy Sensor
 LRF2-OCRB Battery Power
 Job: 1001142131 Tested: RM
 Sleep Mode

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6

Horizontal 30 - 200MHz -----											
1	31.1912	12.56 pk	.4	18.4	31.36	40	-	-	-	-	-
	Azimuth:251	Height:400	Horz	Margin [dB]		-8.64	-	-	-	-	-
2	112.1922	13.82 pk	.7	11.9	26.42	43.5	-	-	-	-	-
	Azimuth:357	Height:100	Horz	Margin [dB]		-17.08	-	-	-	-	-

Vertical 30 - 200MHz -----											
3	76.7968	13.57 pk	.6	6.8	20.97	40	-	-	-	-	-
	Azimuth:16	Height:100	Vert	Margin [dB]		-19.03	-	-	-	-	-
4	179.5796	13.66 pk	.8	15.9	30.36	43.5	-	-	-	-	-
	Azimuth:105	Height:100	Vert	Margin [dB]		-13.14	-	-	-	-	-

Horizontal 200 - 1000MHz -----											
5	292.4462	14.14 pk	1.1	13.7	28.94	46	-	-	-	-	-
	Azimuth:358	Height:200	Horz	Margin [dB]		-17.06	-	-	-	-	-
6	932.7664	14.63 pk	1.8	23.5	39.93	46	-	-	-	-	-
	Azimuth:97	Height:100	Horz	Margin [dB]		-6.07	-	-	-	-	-

Vertical 200 - 1000MHz -----											
7	755.8779	15.76 pk	1.6	22.1	39.46	46	-	-	-	-	-
	Azimuth:342	Height:200	Vert	Margin [dB]		-6.54	-	-	-	-	-
8	990.3952	14.98 pk	1.9	24.8	41.68	54	-	-	-	-	-
	Azimuth:227	Height:400	Vert	Margin [dB]		-12.32	-	-	-	-	-

LIMIT 1: FCC Part 15 Class B
 LIMIT 2: NONE
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE

Appendix A

Accreditations and Authorizations



NVLAP Lab code: 100255-0

NVLAP: The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is comprised of laboratory accreditation programs (LAPs) which are established on the basis of requests and demonstrated need. Each LAP includes specific calibration and/or test standards and related methods and protocols assembled to satisfy the unique needs for accreditation in a field of testing or calibration. NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific calibrations or tests. Accreditation criteria are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), NVLAP Procedures and General Requirements, and encompass the requirements of ISO/IEC 17025. For a full scope listing see <http://ts.nist.gov/ts/htdocs/210/214/scopes/1002550.htm>



FCC: Details of the measurement facilities used for these tests have been filed with the Federal Communications Commission's Laboratory in Columbia, Maryland (Ref. No. 91040).



Industry Canada Industrie Canada

Industry of Canada: Accredited by Industry Canada for performance of radiated measurements. Our test site complies with RSP 100, Issue 7, Section 3.3. File #: IC 2181



VCCI: Accepted as an Associate Member to the VCCI. The measurement facilities detailed in this test report have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. Registration Nos.: (Radiated Emissions) R-797, (Conducted Emissions) C-832, C-83400, and C-81879 and (Conducted Emissions - Telecommunications Ports) T-1582 and T-1583.

Job Number: 1001142131 File Number: MC15896 Page 54 of 54
Model Number: LRF2-OCRB-P-xx
Client Name: LUTRON ELECTRONICS INC
FCC ID: JPZ0061 IC Number 2851A-PZ0061



ICASA: ICASA (Independent Communications Authority of South Africa) has appointed UL as a Designated Test Laboratory to test Telecommunications equipment for type approval in compliance with CISPR 22 to assist in fulfilling its mandate under section 54(1) of the Telecommunications Act, 1996 (Act 103 of 1996).



NIST/CAB: Validated by the European Commission as a U.S. Conformity Assessment Body (CAB) of the U.S.-EU Mutual Recognition Agreement (MRA) for the Electromagnetic Compatibility - Council Directive 89/336/EEC, Article 10 (2). Also validated for the Telecommunication Equipment-Council Directive 99/5/EC, Annex III and IV, Identification Number: 0983.

NIST/CAB: Provisioned to act as a U.S. Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the Asia Pacific Economic Cooperation (APEC) MRA between the American Institute in Taiwan (AIT) and the United States. Our laboratory is considered qualified to test equipment subject to the applicable EMC regulations of the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) which require testing to CNS 13438 (CISPR 22).

NIST/CAB: Recognized by the Infocomm Development Authority of Singapore (IDA) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Our laboratory is provisionally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA. Our scope of designation includes IDA TS EMC (CISPR 22), IEC 61000-4-2, -4-3, -4-4, -4-5, and -4-6